

**Project Title: VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning**

DEGREE: Bachelor of Engineering/Technology

BRANCH: Electronics and Communication Engineering

Team ID : PNT2022TMID40052

Team Strength : 5

Team Leader : ASWINI A (511519106003)

Team member : AKASH B (511519106002)

Team member : NEERAJ M (511519106701)

Team member : LIYASKHAN I (511519106007)

Team member : KISHORE R (511519106006)

# 1.INTRODUCTION:

Swimming is one of the best exercises that helps people to reduce stress in this urban lifestyle. Swimming pools are found larger in number in hotels, and weekend tourist spots and barely people have them in their house backyard. Beginners, especially, often feel it difficult to breathe underwater which causes breathing trouble which in turn causes a drowning accident.

## 1.1 Project Overview:

A passive aid to the lifeguard that gives an underwater view via CCTV cameras. However it does not incorporate a detection system. Glare can be a potential problem with viewing monitors in bright environments. However, it is possible to incorporate shrouds around monitors.

### Software:

Programming IDE : Atmel Studio7  
Programming Language : Embedded C  
Compiler  
Programmer  
AVR GCC  
ATMEL AVR ISP MKII

### Hardware:

ATmega32A Microcontroller 16\*2 LCD  
MPX10DP Pressure sensor HX711 24 bit ADC  
SIM 900 GSM Modem  
DC Gear Motor  
5V Regulated Power Supply  
12V Adapter,Swimming Pool

## 1.2 Purpose:

Concerns over inconsistent levels of reliability of systems and situations where glare, swimming aids or high occupancy / activity rates can cause false alarms

- Impact of the additional cost on financial viability
- Risk that such systems can create a false sense of security for lifeguards
- Risk that numerous false alarms can cause lifeguards to ignore a genuine emergency situation
- Limited level of in-use knowledge and experience in UK pools.

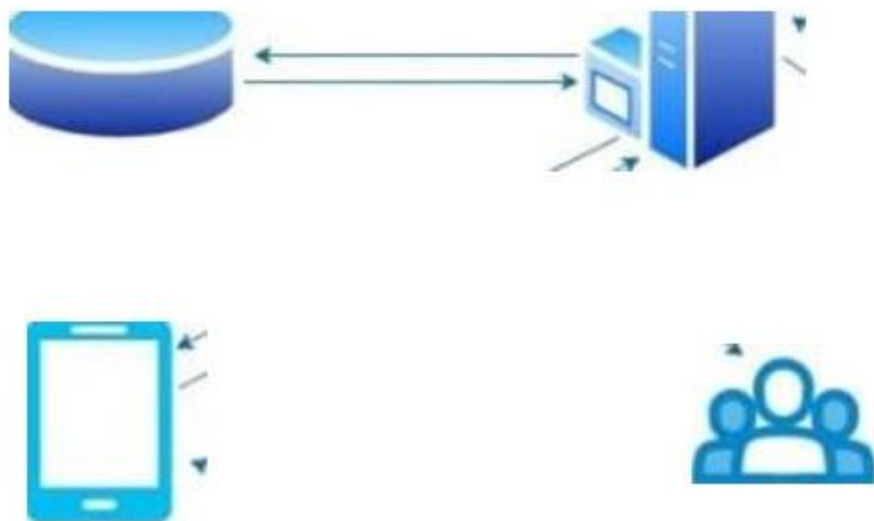
## 2.LITERATURE SURVE

It means it does not connect to the internet but takes the signal of the networks around it. It triangulates the signals of the network and shows us the location of the child with latitude and longitude.

when a violation of child safety is identified, a certain sensor in the child module will emit a signal, which is the main function of the suggested child tracking system. These sensors and WFPS will send this signal to the microcontroller which will then send it to the transmitter which will then send it to the parent module.

The Web application in the device will update the location of the child at an interval of 30 min, 1 hour and 2 hours. Physical Layer consists of the sensors and the Raspberry Pi Zero. In the device the sensor

And the main hardware device is Raspberry Pi Zero. The connection between them is one way. Cloud will be having all the storage of the application.

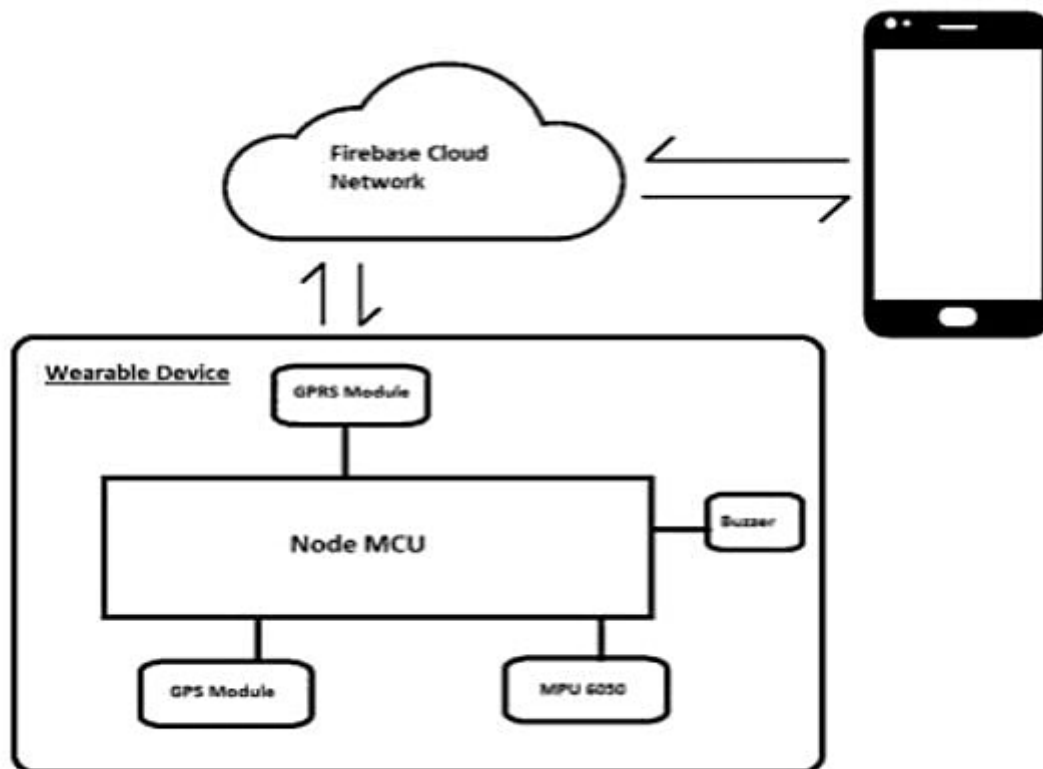


Architecture Design

A gyroscope is a gadget that is used to help determine orientation. This device can measure and maintain the intention and angular velocity of an object. Using MPU 6050 gyroscope and accelerometer the present location of the children will be tracked and the voice notifications or SMS will be sent on the parent's smartphone where the application will be installed.

Node MCU microcontroller is used to process the data given by these sensors. The collect data will be stored in the firebase cloud network. The sensors, modules, buzzer are connected and programmed to observe the child's movements and also to follow the child's location.

The application stores the last update location in firebase cloud server. Alarm buzzer is an audio signaling instrument that is either electromechanical or piezoelectric. when a child move out of zone or moves away from the parents then the parents can detect their child by the sounding loud alarm



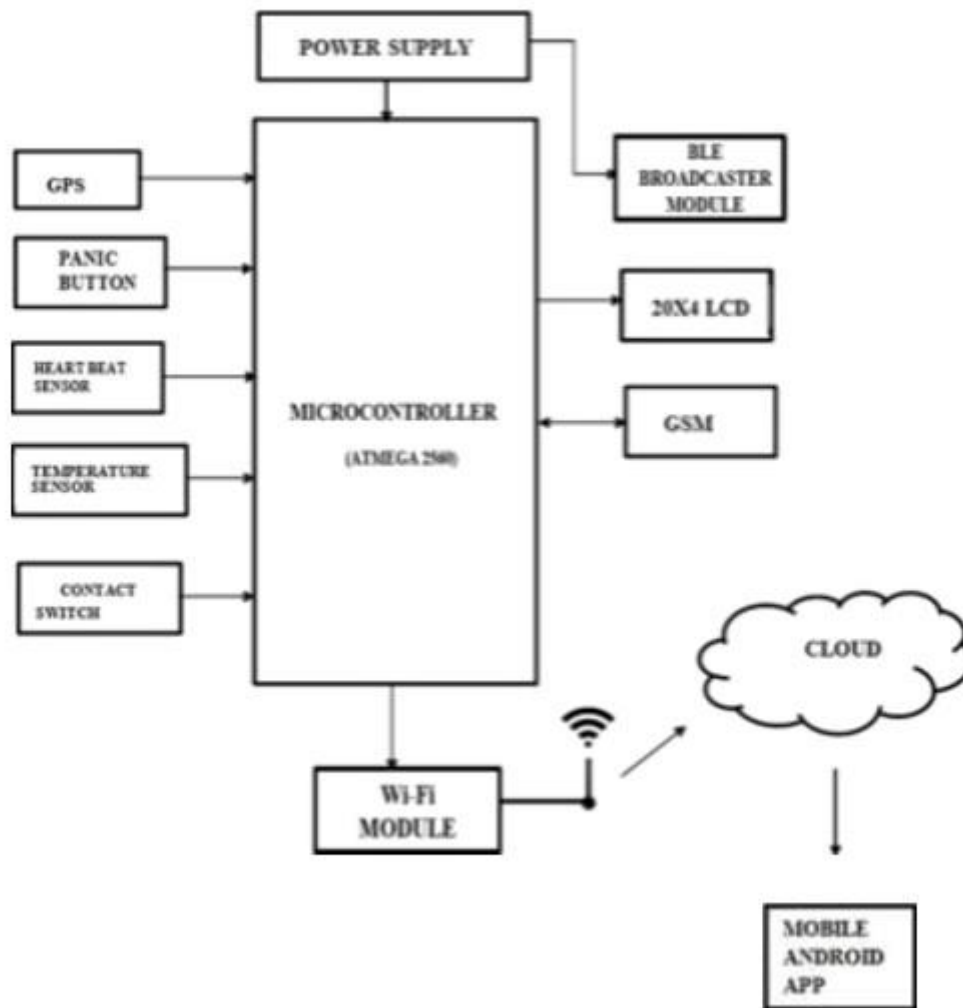
The LinkIt ONE board is an open source platform. It consists of inbuilt Wi-Fi, GSM, GPS and Bluetooth modules. The link it one board is similar to the arduino board and it is termed as all-in-one prototyping board for wearable's and IoT devices. The board consists of ARM7 EJ-S and the clock speed is 260MHz. A SIM and SD card slots are provided on the board itself. The data is analysed using MATLAB. The audio play back module produces the recorded sound different sensors are accelerometer sensor cry sensor temperature sensor gas sensor flame sensor and PIR sensor.

The Pulse rate interval is analog value from the sensor it is converted into the beats per minute(BPM)by formulae.  $BPM = (1.0/Pulse\ Interval)$



Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the binding gadget an alert is provided to parent on binding gadget. The system is used to monitor the health parameters and also used for location tracking during necessary situations in safety concern.

For measuring body temperature of the child DS18B20 temperature sensor is used. Safety gadget consists of BEACON and BLE packet is transmitted through it, this packet is received by binding gadget which has BLE (Bluetooth Low Energy) receiver module, the packet usually contains information such as identification number signal strength etc.



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## 2.1 Existing Problem:

- Lack of relevance – limited stakeholder engagement can produce a review that is of limited practical use to decision-makers
- Mission creep – reviews that don't publish their methods in an a priori protocol can suffer from shifting goals and inclusion criteria
- A lack of transparency/replicability in the review methods may mean that the review cannot be replicated – a central tenet of the scientific method!
- Selection bias (where included studies are not representative of the evidence base) and a lack of comprehensiveness (an inappropriate search method) can mean that reviews end up with the wrong evidence for the question at hand
- The exclusion of grey literature and failure to test for evidence of publication bias can result in incorrect or misleading conclusions
- Traditional reviews often lack appropriate critical appraisal of included study validity, treating all evidence as equally valid – we know some research is more valid and we need to account for this in the synthesis

Inappropriate synthesis (e.g. using vote-counting and inappropriate statistics) can negate all of the preceding systematic effort. Vote-counting (tallying studies based on their statistical significance) ignores study validity and magnitude of effect sizes

## 2.2 REFERENCE:

A way of giving credit for someone's thinking, writing or research. Marking the material when we use it (a citation) and giving the full identification at the end (a reference).

In academic writing you are obliged to attribute every piece of material you use to its author.

Also known as "author date system." References are listed alphabetically. Eg-A recent study (Moazeri H et al, 2006) reported that the analysis of association between BMI and physical activity in children revealed that as the amount of physical activity increased the prevalence of overweight and obesity decreased in Tehran.

A uniform set of requirements for bibliographic references.

- A numbered style.
- Follows rules established by the International Committee of Medical Journal Editors.
- Also known as Uniform Requirements for Manuscripts submitted to Biomedical Journals.
- References are listed in numerical order in the Reference list at the end of the paper.
- We can give references of Journal Book Materials from Internet

The manuscript submission web site offers the authors a method where they can check the correctness of the references they have used Springer journals - eg Indian Pediatrics, Indian of Pediatrics are also having reference Checking facility.

## 2.3 PROBLEM STATEMENT DEFINITION

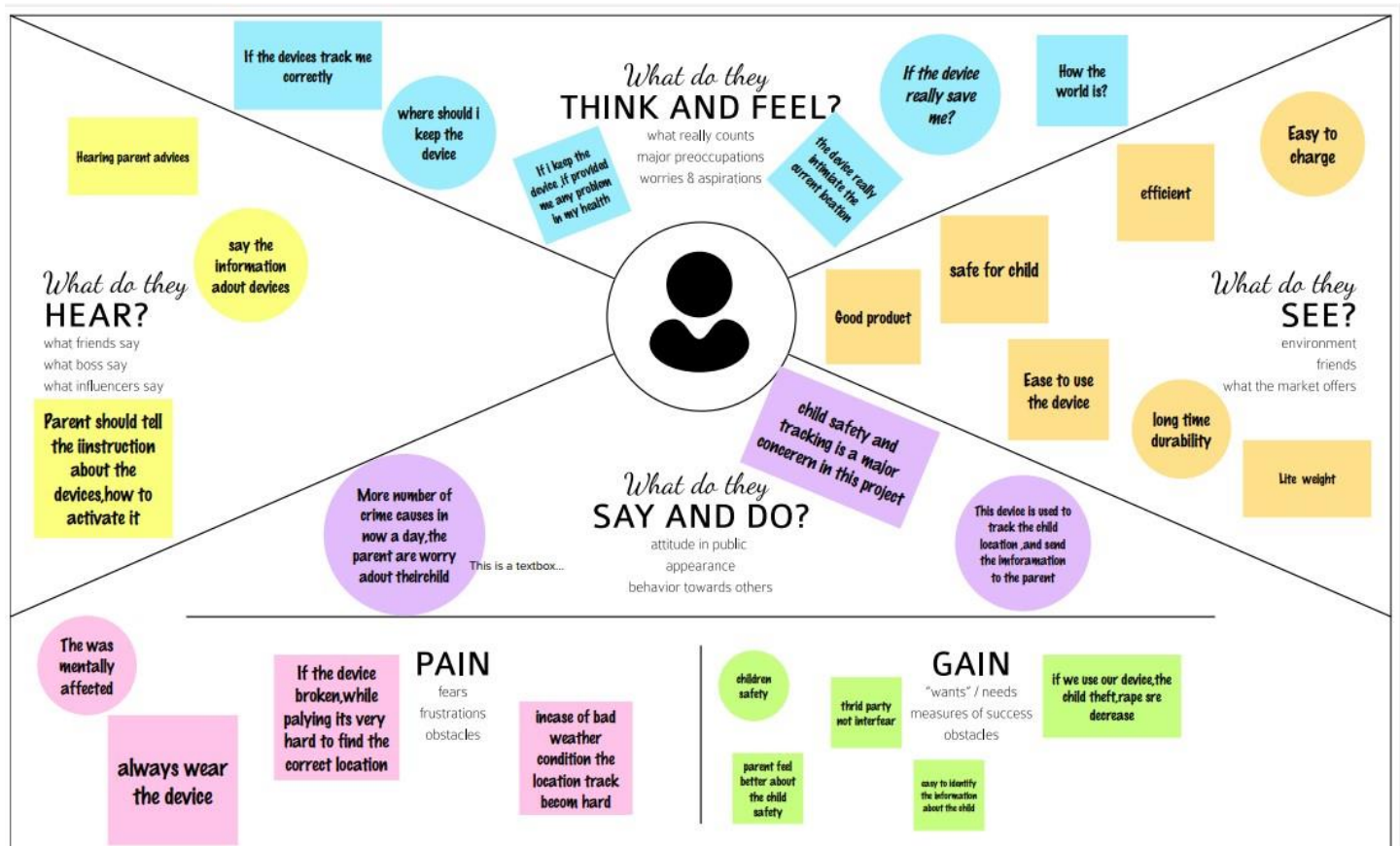
- Swimming pool drowning monitoring system based on video technology is mostly reported in the literature. There are three kinds drowning monitoring system according to the different position of the camera.
- One is that the camera is mounted on the underwater swimming pool wall, then monitor underwater swimmer status.
- A limitation of this equipment is that if too many swimmers, the occlusion problem arises.
- The other is that the camera is mounted upon the water, and monitors the Swimmer posture change.
- The reflection and refraction of light in air-water interference will affect the image quality, and drowning man feature this method detected is not easy to distinguish swimmers and divers obviously.



- The third is a combination of the two, underwater camera and aerial camera matched, monitoring the swimmer posture.
- This system needs constant observation which is the main disadvantage.

### 3. IDEATION & PROPOSED SOLUTION:

#### 3.1 EMPATHY MAP:



## 3.2 IDEATION:

Brainstorm & idea prioritization

- Team gathering Define who should participate in the session and send an invite.
- Share relevant information or pre-work ahead. Set the goal Think about the problem you'll be focusing on solving in the brainstorming session.
- A B Learn how to use the facilitation tools Use the Facilitation Superpowers to run a happy and productive session.
- What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.
- Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.
- Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible

## 3.3 PROPOSED SOLUTION:

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Tracking the child activities, location and notifying their position to their parents.
2.	Idea / Solution description	Designing the project with sensors like temperature sensor, heartbeat sensor, using long range camera with high storage and protecting by emitting harmful light sources or gas.
3.	Novelty / Uniqueness	In this proposed system, gas emitter or harmful light source or smoke detector is used than other systems.
4.	Social Impact / Customer Satisfaction	Secured information, cost efficient and Real-time tracking is possible.
5.	Business Model (Revenue Model)	The proposed system can be used for child security. Selling the product directly to the parents Selling the product to the child care centers
6.	Scalability of the Solution	The proposed system has less complexity and portable system. Highly secured database handled and highly strong communication.

## 3.4 PROBLEM SOLUTION FIT:

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Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <b>CS</b> Who is your customer? i.e. working parents of 0-5 y/o. kids  Parents (mainly suitable for Working parents) and helpful for persons in Day-Care.	<b>6. CUSTOMER</b> <b>CC</b> What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.  Discontinuity in signal may cause signal loss and continuous monitoring is not possible.	<b>5. AVAILABLE SOLUTIONS</b> <b>AS</b> Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking  Monitoring the child health condition through sensor and send notification in case of problem.	Explore as,differentiate
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <b>J&amp;P</b> Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one: explore different sides. <ul style="list-style-type: none"><li>To give better network connection.</li><li>To improve the database to manage the details.</li><li>To improve new technique to save the child from strangers.</li></ul>	<b>9. PROBLEM ROOT CAUSE</b> <b>RC</b> What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.  Lack of continuous network or signal.	<b>7. BEHAVIOUR</b> <b>BE</b> What does your customer do to address the problem and get the job done?  i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)  Parents giving awareness and tips to the child .but not sure it helps everytime	
Focus on J&P, tap into BE, understand RC	<b>3. TRIGGERS</b> <b>TR</b> What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.  Through Social Media and awareness about child safety	<b>10. YOUR SOLUTION</b> <b>SL</b> If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.  <ul style="list-style-type: none"><li>Fix web camera or sensor to analysis the surrounding of the child.</li><li>Make confirm about the environment around the kid.</li></ul>	<b>8.CHANNELS of BEHAVIOUR</b> <b>CH</b> <b>8.1 ONLINE</b> What kind of actions do customers take online? Extract online channels from #7 <b>GPS tracking and networking</b>  <b>8.2 OFFLINE</b> What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.  Calculating distance , checking health condition of child when the gadget is off.	Focus on AS, tap into BE, understand RC
	<b>4. EMOTIONS: BEFORE / AFTER</b> <b>EM</b> How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design.  Lack of safety > safety and under monitoring			

## 4.REQUIREMENT ANALYSIS:

Inbound payments received from a corporate channel, receives pacs.008 with payments in GBP or EUR currencies sent to a file.

The location of the file directory is declared in Fragmentor.msgflow FileInputNode Property input directory path.

For more information, see Fragmentor.msgFlow.

- Validate the payment file.

- Route each payment based on currency. If IBM® ODM is integrated, further routing checks can be processed. For more information on integrating ODM with fragmentation samples, see Decision Service Node.

- For payments of type GBP, currency processing, mapping, and validation are done at batch level and submitted in batches to STP (straight through processing).

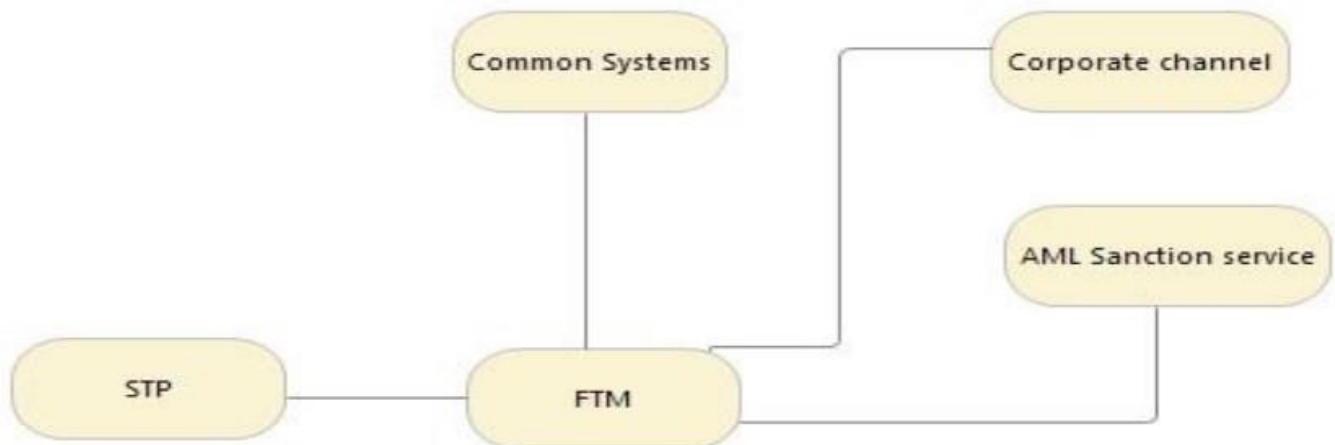
Before STP, a batch output file of type GBP payments with the format of pacs.008 is created.

- The location of the output file directory is declared in DeFragmentor.msgflow FileOutput node Property Directory path. For more information, see DeFragmentor.msgFlow.

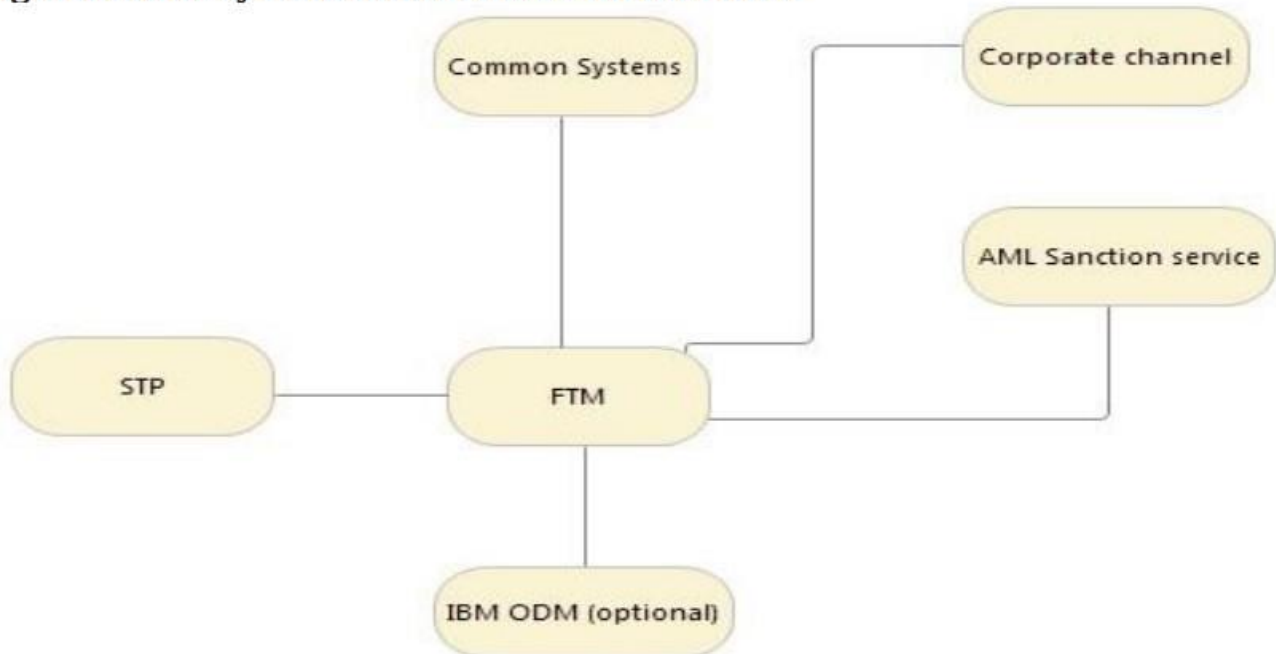
For payments of type EUR, currency processing, mapping, and validation are done and submitted as single payments to AML (anti money laundering) as a sanction service request, when a valid response is sent from AML sanction service response to FTM.

- Before the AML sanction service response, single payment messages (MT103) are created and put on a message queue, ready to be sent to the common system. Outbound fragments are not used for EUR payments.

### Fragmentation system interaction



### Fragmentation system interaction with IBM ODM



The client can submit a batch of payments for processing. The payments are processed as follows:  
Batch > Batch This is also called bulk processing.

Validation is done at the batch level and for each fragment, the payments routed and transformed and then de-fragmented.

After all defragmentation is completed, the payments message is submitted for STP.

Batch > Singles If the currency is Euro, each payment must be checked by sanction service before being submitted to the Euro gateway.

If IBM Operational Decision Manager (ODM) is enabled, the decision to send as batch versus singles is made by ODM based on currency.

## 4.2 Non-functional requirements

Non-functional requirements are not validated by the topology editor; they serve as notes to specify details about the units.

You can apply these constraints to any unit to indicate non-functional requirements, but in most cases, non-functional requirements are placed on deployment units.

For example, the following data deployment unit has three constraints that represent non-functional requirements:

### **Availability**

Specifies the percent of each year that the system is available

### **Size per submission**

Specifies the amount of data in bytes that the unit expects to receive at one time

### **Expected volume**

Specifies the amount of disk space in instances of the data type and an expected growth rate

The following execution deployment unit has four constraints that represent non-functional requirements:

### **Usage window per day**

The number of hours per day that the system is available

### **Daily load**

The average number of invocations per day

### **Peak load**

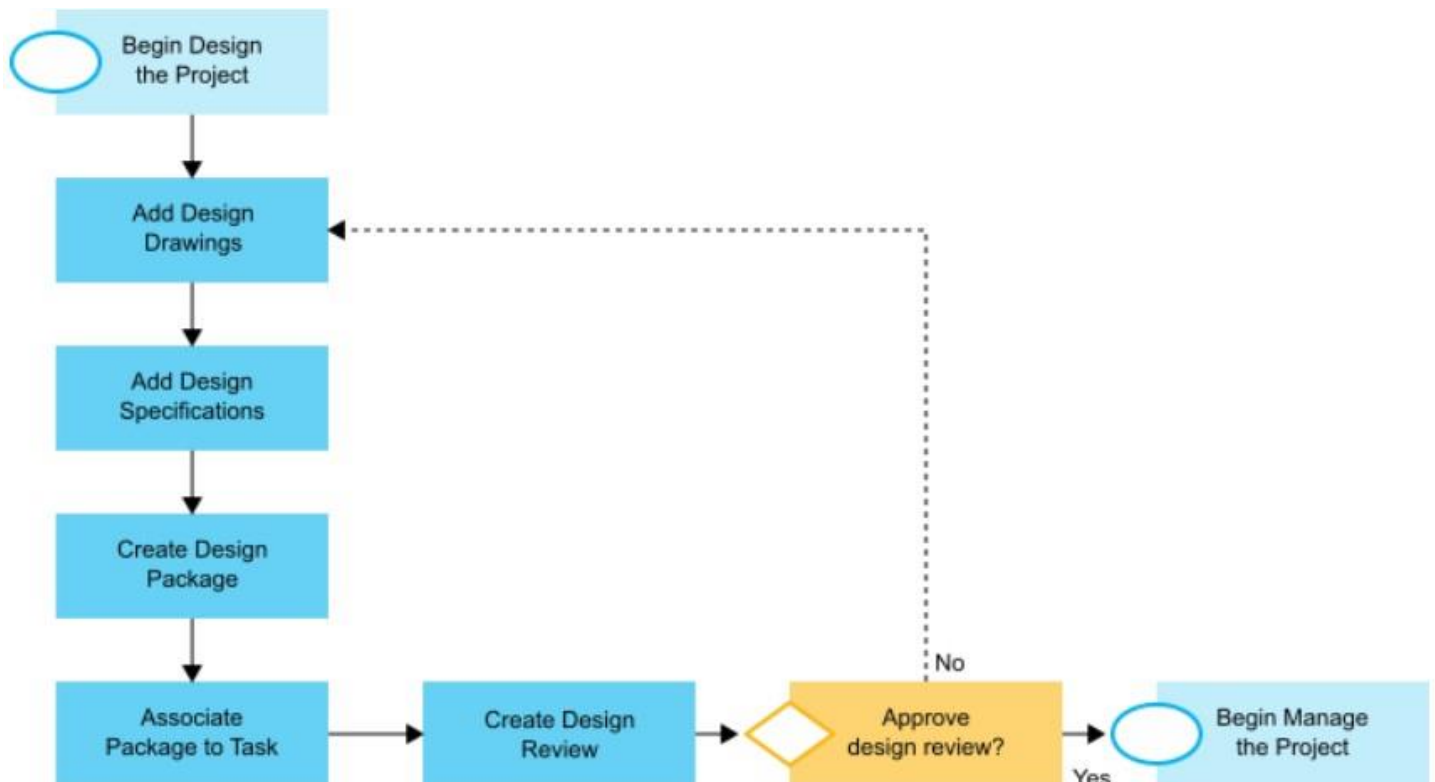
The maximum number of invocations per day

### **Response time**

The response time in seconds of a specified percentage of invocations

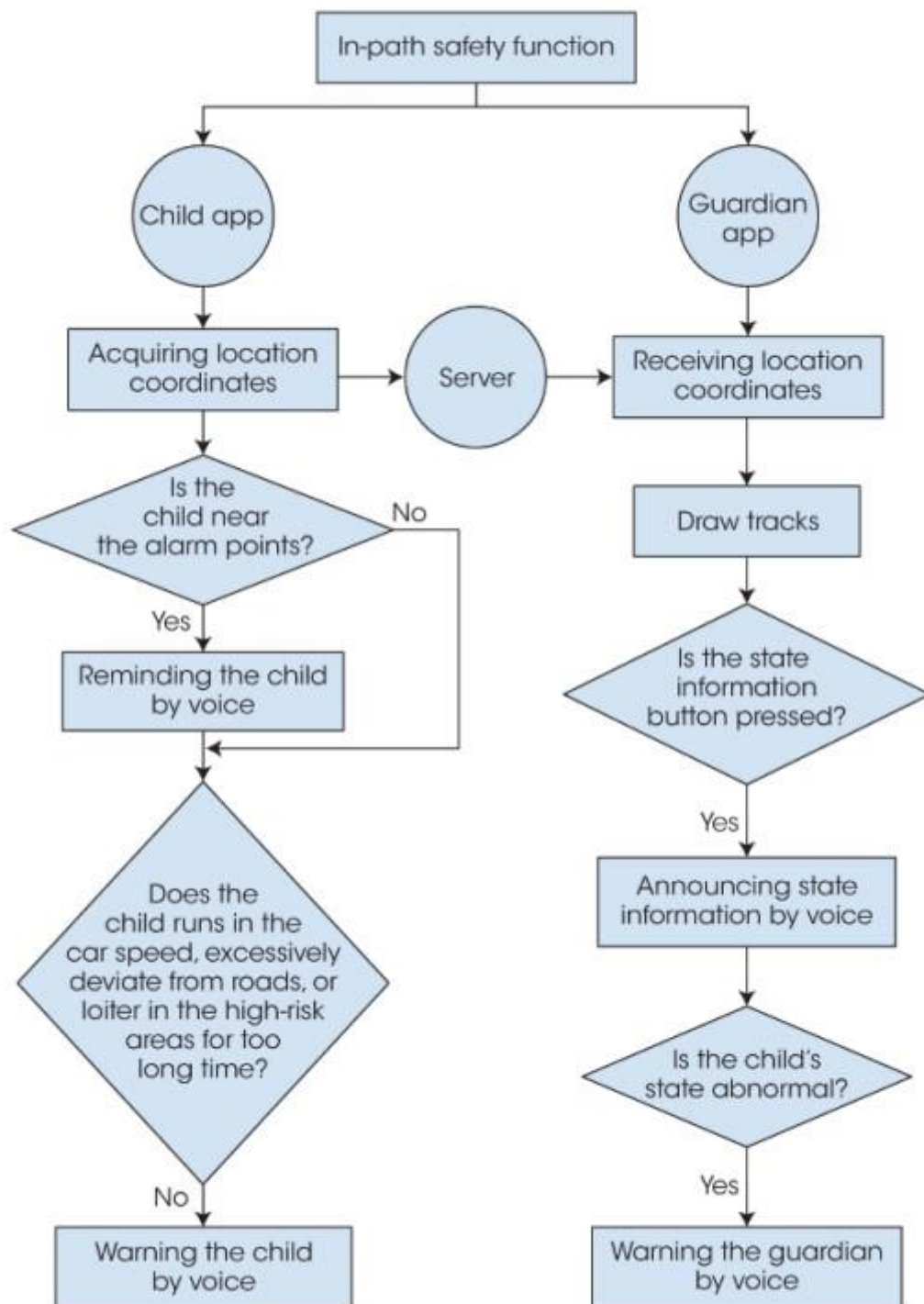
## 5.PROJECT DESIGN

Project design is **an early phase of the project lifecycle where ideas, processes, resources, and deliverables are planned out**. A project design comes before a project plan as it's a broad overview whereas a project plan includes more detailed information



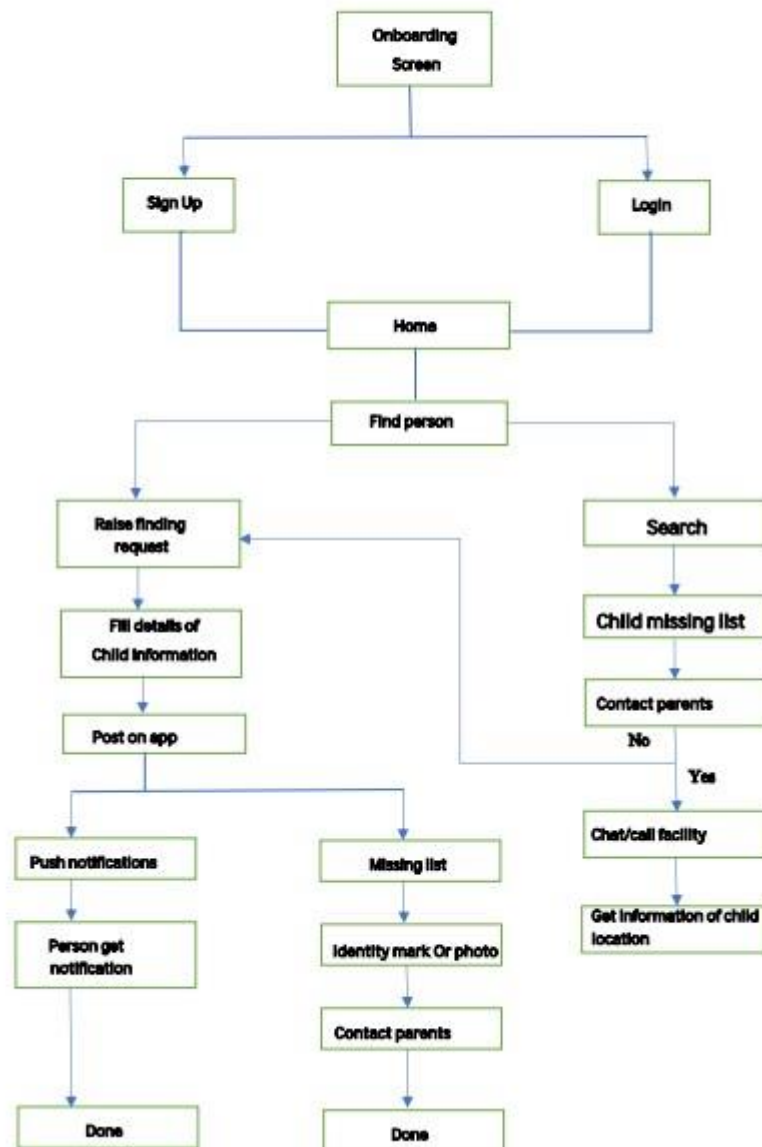


## 5.1 DATA FLOW DIAGRAM:



## 5.2 SOLUTION & TECHNICAL ARCHITECTURE:

### SOLUTION ARCHITECTURE



### Solution Architecture



## 5.3 User Stories

Define user stories for an MVP: A practical example

The Garage Method for Cloud follows a process that begins by using [Enterprise Design Thinking](#) to produce an MVP statement. An *MVP statement* is the absolute bare minimum in a delightful experience that your target persona accepts to accomplish a goal. After the MVP is defined, the inception process begins. In the inception process, the MVP statement is expanded into user stories.

The MVP must explicitly state a measurable goal. Often, the MVP statement includes all these facets.

**Personas perform actions to delight them within boundaries resulting in a measurable goal.**

MVP Statement

For example, consider a recent MVP statement from the airline industry:

Polly the Passenger should be able to rebook her cancelled flight on her phone within one minute without having to speak to a human at the gate.

Notice that this MVP statement has all the mentioned facets, including a measurable goal and targets on the actions. In the inception process when this MVP statement is turned into user stories, stories might be as follows:

MVP: Polly the Passenger should be able to rebook her cancelled flight on her phone within one minute, without having to speak to a human at the gate.

Polly can view up to 20 available flights for rebooking.

Polly selects one of the available flights and views the available seats on that flight.

Polly can view available flights in under 2 seconds.

Polly can view the available sets on a selected flight in under 2 seconds.

Notice the progression in the examples. The action in the MVP (rebook a canceled flight), is expanded into a set of user stories that either have a functional or a nonfunctional (performance) facet. User stories must be as small as possible, which is why the performance tests are broken out. Each user story has one or more tests, such as a test for whether you can display 20 flights, or an automated performance test to ensure that the display is shown within 2 seconds. These tests ensure that after a functional or nonfunctional story is done, it stays done. The tests that are delivered alongside the story act as a guarantee. For example, even if the page already loads within 2 seconds, marking the performance story complete means adding tests to detect future regressions.

What user stories are not

Now that you know what user stories are, how to write them, and how squads manage them, make sure that you know what isn't included as part of a user story. User stories are not a design specification for the function. The initial version of the user story focuses on what is needed, by whom, why, and a measurable result. The story doesn't focus on how to implement it. The implementation is determined when the story is under development. Then, the developer can enhance the story with design information and decisions that were made as part of the interactions with stakeholders and the development process.

User stories don't define when to implement the function. After a user story is written, it's added to a product backlog and ranked against all of the other known user stories.

Go deeper: User stories must cover more than what the product does

A whole set of user stories is often forgotten in the inception process. Those user stories are the ones that are in between the obvious actions. Consider internal stakeholders when you write stories because stakeholders are often critical to measuring the business hypothesis. For example, a team might have stories for Bob the business owner, who needs a dashboard to track sales or to coordinate product dispatch.

User stories around the nonfunctional facets are equally important. These stories capture what is required to delight the user, such as performance and security. As shown, performance requirements can be expressed as response-time targets and validated by the product owner.

Expressing security requirements as a user story requires more domain knowledge. Something like `As a shopper, the site is secure` is a poor user story because it doesn't have a clear definition of done. What would a product owner do to test it? Instead, discussions about security might lead to the development of new personas, such as offensive security researchers and attackers.

For example, no user wants to log in, but users care about whether other people can see their data. You might express this requirement as `Hank the hacker cannot see Polly's flight details`. In practice, this story is implemented as a login page. The POscript (acceptance steps) for this story are a set of actions that show how Polly continues to see her flight details by logging in.

A second set shows how Hank can't log in with an incorrect password. For a more security-critical application, you might have a number of deeper, but still concrete, security stories. For example, you might write `Blake the attacker cannot use an SQL injection attack on any of the APIs or Hank the hacker cannot hack the site by using the OWASP (Open Web Application Security Project) Top 10 vulnerabilities`. These stories are good because they're measurable.

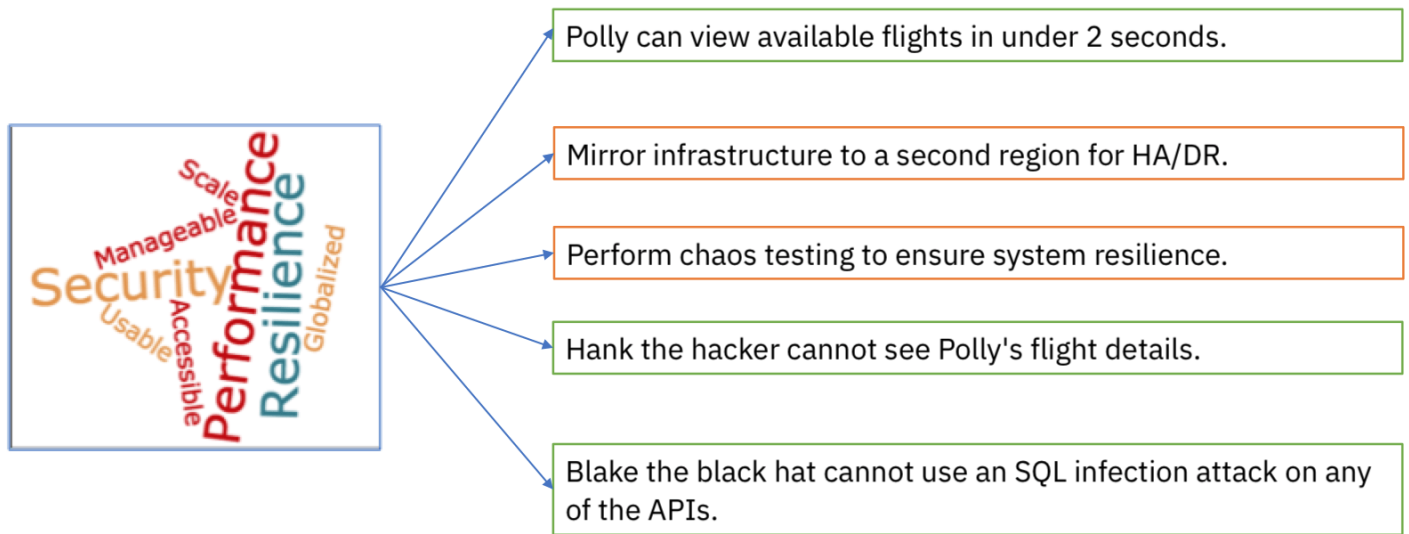
Work items for nonfunctional facets

Some nonfunctional requirements shouldn't be expressed as user stories but should still be in the same ranked backlog as the user stories. For example, in the flight-booking MVP, the measurable goal was to be able to rebook without having to talk to a human. If the expectation is that no human interaction is required 100% of the time, continuous availability is required. That requirement is expensive to implement.

To offset cost, you can scale back that availability requirement to a percentage of the time, such as 99%, which allows for a cheaper solution that is short of continuous availability. Meeting an availability target is important, but it's not a user story.

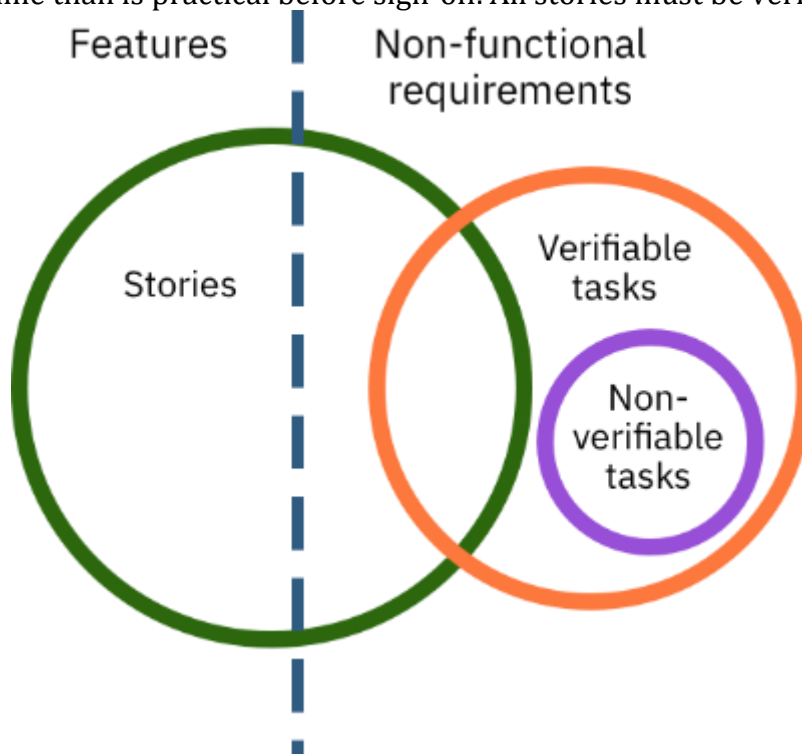
A product owner can't validate a story such `Polly should be able to access the mobile application and avoid talking to a human during no less than 99.9% of the year. Outages should last no longer than 30 minutes at a time`. Although the story has a numeric success criteria, it is describing events that happen (or don't happen) in the future. A product owner can't validate it by using normal "given/when/then" criteria unless they watched the site for a year and timed outages.

Instead, they can convert the requirements into actions that help to achieve them and track the actions in the backlog as tasks. For example, activities to support a high availability requirement might include *Perform chaos testing to ensure system resilience* or *Mirror infrastructure to a second region for HA/DR*. Nonfunctional work items emerge as part of discussions between the developers, the squad lead, and the product owner.



Stories can be satisfied by implementing new product features or by changing the nonfunctional characteristics of an application. Use tasks only for plumbing work or nonfunctional requirements.

Nonfunctional requirements are verifiable or non-verifiable. Direct measurement is either too difficult or requires more time than is practical before sign-off. All stories must be verifiable.



Tasks that track availability work are only one type of nonfunctional work item. Others include operations such as maintenance, logging, and alerting. A Cloud Service Management and Operations shift left and observability need work from the development team.

This work is important and must be tracked, but it isn't visible to a user. Another type of work item is plumbing (infrastructure) to support new capability.

Work items for plumbing

In the Garage Method for Cloud, the ideal user story takes about a day to complete. In practice, some stories are larger.

You might need substantial invisible plumbing to make them work, or they might have complex dependencies.

For example, setting up the ledger infrastructure and chain code in a blockchain project might take several days, but that effort isn't directly visible to a user or even a product owner.

To limit work-in-progress and also avoid multiday user stories, pull out substantial plumbing or dependency work from these user stories.

This plumbing work can be tracked on the backlog as a task and the product owner doesn't track it.

Normally, this split into tasks happens closer to when work starts on the user story.

The following table summarizes the different types of work items that can appear in a backlog:

Work item	User story	Task	Defect
Has a persona	Yes	No	Maybe
Who creates it	Product owner	Delivery team	Product owner, delivery team, or users
Who prioritizes it	Product owner	Delivery team	Product owner
Who accepts it	Product owner	No one	Originator
Measurable (directly verifiable)	Yes	Maybe	Yes
Creates capability	Yes	No	No
Must have points	Yes	No	No

Who owns the work items that cover nonfunctional facets:

After you write your nonfunctional work items (user stories or tasks), make sure that they're not ranked so far down the backlog that they're never addressed.

Because product owners often think in functional terms, they must be educated in nonfunctional thinking and persuaded that nonfunctional work items are as important to the business as functional user stories. Consider the airline example. If you implemented the ability to reschedule a canceled flight from a cell phone and that function was available only 50% of the time, your customers would be unhappy.

In the Garage Method for Cloud, an ongoing negotiation occurs between the squad lead and the product owner to ensure that the backlog doesn't swing too far in one direction.

A key responsibility of the squad lead is to make sure that both the nonfunctional and functional facets of the application are addressed. Another role that can be helpful to rank user stories is an architect. Some agile methods maintain two different owners: an architecture owner and a product owner.

Your team might or might not choose to go that far. Make sure that all three roles have a seat at the table in ranking discussions.

*Planning Extreme Programming* makes this key point:

Eventually the customer will have to specify acceptance tests whose execution will determine whether the user stories have been successfully implemented.

Performance testing is an important part of developing a system in the Garage Method for Cloud. Individual functional user stories often have performance constraints that must be tested as part of the unit testing process, especially when the team is using a microservices architecture.

In a microservices architecture, small sets of user stories often map directly to specific microservices. However, like those user-story specific tests, the team must also develop two types of acceptance tests: functional acceptance tests and nonfunctional acceptance tests.

In the airline MVP statement, one agreement between the team and the product owner was that the entire rebooking process must occur within a minute.

The total performance budget of all the different steps of the rebooking process must fit within that minute. The application must pass the functional acceptance tests that are defined by the product owners and pass an end-to-end performance test that demonstrates that the entire process can occur within 1 minute.

The availability work item must have a set of tests defined. In availability testing, you shut down all or part of the system (destructive testing). Then, you either restore it or switch to inactive regions to ensure that the process can be done within the time allotted.

Similarly, you can conduct chaos testing by using a framework like Chaos Monkey to ensure that the system meets the requirements that are defined by the availability tasks even when components unexpectedly fail.

## **6.PROJECT PLANNING & SCHEDULING**

Sprint planning is **an event in scrum that kicks off the sprint**. The purpose of sprint planning is to define what can be delivered in the sprint and how that work will be achieved. Sprint planning is done in collaboration with the whole scrum team

### **6.1 SPRINT PLANNING & ESTIMATION:**

- Estimation is done by the entire team during Sprint Planning Meeting. The objective of the Estimation would be to consider the User Stories for the Sprint by Priority and by the Ability of the team to deliver during the Time Box of the Sprint.
- The Product Owner ensures that the prioritized User Stories are clear, can be subjected to estimation, and they are brought to the beginning of the Product Backlog.
- As the Scrum Team in total is responsible for the delivery of the product increment, care would be taken to select the User Stories for the Sprint based on the size of the Product Increment and the effort required for the same.
- The size of the Product Increment is estimated in terms of User Story Points. Once the size is determined, the effort is estimated by means of the past data, i.e., effort per User Story Point called Productivity
- Analogy Estimation uses comparison of User Stories. The User Story under Estimation is compared with similar User Stories implemented earlier. This results in accurate results as the estimation is based on proven data.
- Estimation is done by the entire team during Sprint Planning Meeting. The objective of the Estimation would be to consider the User Stories for the Sprint by Priority and by the Ability of the team to deliver during the Time Box of the Sprint.
- During sprint planning, we break the stories down into tasks, estimate those tasks, and compare the task estimates against our capacity. It's that, not points, that keep us from overcommitting in this sprint. No need to change the estimate.

### **6.2 SPRINT DELIVERY SCHEDULE:**

The purpose of sprint planning is for the team to commit to complete a collection of stories that add new functionality to the product by the end of the sprint. The team plans and estimates, and then decides how much work can fit into the sprint. The first step is to pull as many stories as the team can commit to from the release backlog into the sprint. The second step is to develop the tasks for each of the stories that the team must complete

- Sprint planning is an essential process that an organization needs to adapt to be successful. It indicates the roadmap for the next two to four weeks when stakeholders and team members decide as a group what they need to complete and deliver before the next sprint review meeting.
- Sprint planning is the first step in an agile project and is crucial to project success. A high-level view of the sprint backlog is created where the scrum team discusses, creates a plan for completing their work, establishes dependencies, and identifies risks that need to be addressed.
- Sprint planning is an open forum where everyone comes together, appreciates each other's work, and gets more clarity about the sprint goals and objectives.
- That makes every member of the team accountable and re-enforces healthy communication This article will explain and help you understand the concepts and provide tips for successful sprint planning meetings. Additionally, we'll show you how it's not just about the tasks themselves. It's also about helping your team to reach their full potential.
- Sprint planning refers to a meeting that takes place before the start of a sprint. The team conducts this meeting to determine the sprint plan and set a sprint goal.

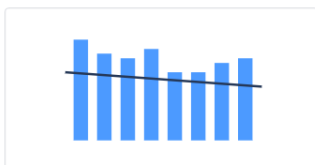
- The members decide on the number of backlog items in the sprint and sets up a sprint backlog and current sprint. The members who take part in the sprint planning meeting include:
- The Scrum Master The scrum master is in charge of facilitating the sprint planning meeting and ensures that the rooms are set, people are prepared, supplies are available, and the video conferencing and other connectivity are set accordingly.
- He/she time boxes the meeting according to the length of the sprint. For example, the duration of a two weeks' sprint should be 2-4 hours. He keeps time and ensures they attain their goal at the end of the sprint planning meeting.
- Product Owner The product owners ensure all the items in the product backlog are set before they start the meeting.
- Therefore, they have to prepare adequately and know the objective of each item. Moreover, the members ask them questions concerning the case and acceptance criteria, and they have to clarify to the

## 6.3 REPORTS FROM JIRA:

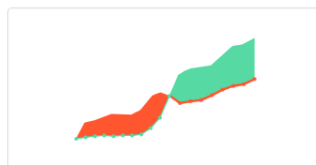
### Work management made easier with Jira reports

Identify trends and work smarter, with out-of-the-box reports for issue analysis and forecasting in Jira Software.

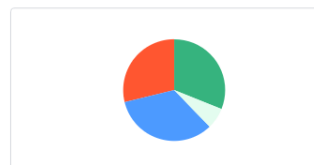
#### ISSUE ANALYSIS



Average Age Report



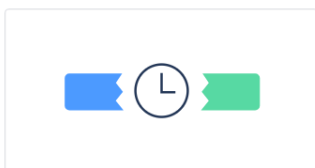
Created vs Resolved Issues Report



Pie Chart Report



Recently Created Issues Report



Resolution Time Report



Single Level Group By Report



Time Since Issues Report

## Tools for Reporting

Let us first start with the out-of-the-box tools available, both pre-installed and available through Atlassian Marketplace. We will look at each tool from a technical perspective and in the next chapter, see how they can be applied to the different types of reporting.



Basic functionalities to maintain the needs to recover the problems :

- Issue analysis
- issue report
- chart report
- recently solved & pending reports
- level wise scheduling
- time based report

## **7. SOLUTIONS FOR PROBLEMS:**

- a. Swimming is one of the best exercises that helps people to reduce stress in this urban lifestyle. Swimming pools are found larger in number in hotels, and weekend tourist spots and barely people have them in their house backyard.
- b. Beginners, especially, often feel it difficult to breathe underwater which causes breathing trouble which in turn causes a drowning accident. Worldwide, drowning produces a higher rate of mortality without causing injury to children.
- c. Children under six of their age are found to be suffering the highest drowning mortality rates worldwide. Such kinds of deaths account for the third cause of unplanned death globally, with about 1.2 million cases yearly. To overcome this conflict, a meticulous system is to be implemented along the swimming pools to save human life.
- d. By studying body movement patterns and connecting cameras to artificial intelligence (AI) systems we can devise an underwater pool safety system that reduces the risk of drowning. Usually, such systems can be developed by installing more than 16 cameras underwater and ceiling and analyzing the video feeds to detect any anomalies.
- e. But AS a POC we make use of one camera that streams the video underwater and analyses the position of swimmers to assess the probability of drowning, if it is higher then an alert will be generated to attract lifeguards' attention.

Note: The system is not designed to replace a lifeguard or other human monitor, but to act as an additional tool. "It helps the lifeguard to detect the underwater situation where they can't easily observe.



## **8.Precation:**

- **Always watch your children and never leave them unattended**
- **Keep children away from pool drains, pipes, and other openings**
- **If a child goes missing, always check the pool area first**
- **Ensure all pools and spas-both in your backyard and any public pool you may visit- have compliant drain covers**
- **Install proper barriers, caps, and alarms on and around your pool and spa**
- **Know how to perform CPR on children and adults**
- **Teach children how to swim**

A further limitation is that the current approach focuses upon drowning events on the surface, with clips ending at the point of complete submergence if the participant has not already responded. While the risk of injury and death is minimised if the target is spotted at this point, lifeguards should still be able to respond to fully submerged targets, even those who are prone at the bottom of a pool.

Brener and Oostman (2002) demonstrated the difficulty of spotting submerged targets when they timed lifeguard responses to unexpected manikins that were allowed to sink in pools. Fourteen percent of lifeguards failed to spot the submerged manikin with three minutes, with 90% of them failing to spot the manikin within the industry standard 10 seconds.

While a surface-based training tool may increase the detection of drowning targets prior to complete submergence, if this is not 100% reliable, then it may result in those few submerged targets who slip through the net of vigilance being even less easy to spot due to Drowning Detection 27 emphasis in training being on rescuing victims at the surface of the water, and always being given a warning before practicing deep water rescues. Nonetheless, the current study has demonstrated a valid testing paradigm that can be extended to include the above suggestions. The method holds promise as a form of assessment, and could lead to the development of more useful training techniques, while simultaneously providing greater insight into visual search skills in complex, real world scenes.

## **9.Results**

### **9.1 Performance Metrics**

SwimEye provides an autonomous drowning detection alarm to swimming pools. However, increasingly, our clients have been informing us about a 'new way' of supervising their pools.

SwimEye allows one lifeguard to supervise an entire aquatic centre, underwater, from one location.

By observing the underwater CCTV at the SwimEye monitoring station, a lifeguard can see clearly throughout an entire pool (or throughout many pools).

This has become a very efficient new lifeguarding technique and it is allowing clients to 'digitalise' their lifeguarding routines.

## 10. Advantage

If you have access to training equipment like fins, paddles, or a snorkel.

you have an incredible opportunity to enhance your swim training.

The biggest advantages of using equipment are **the ability to mix up your training all while working on improving technique, efficiency, and increasing swimming strength**

## Disadvantages

In public pools, swimmers may be injured due to **poor lighting, slippery decks, badly marked pools, poor water clarity, drain entrapment, diving injuries, overcrowding, and lack of supervision and safety equipment**

## 11. Conclusion

Consistently numerous people, including kids, are suffocated or near suffocating in the deeps of the swimming pools, and the lifeguards are not prepared all around to deal with these issues. In this manner raises the necessities for having a framework that will thus recognize the suffocating people and alert the lifeguards at such hazard. It can be installed in International standardized schools where classes are held or training kids

## 12. Future Scope

This project presents an automated vision-based surveillance system to detect drowning incidents in swimming pool. The swimmers in the pool are detected and tracked using the Pi camera. As soon as the swimmer remains under a certain level for

more than a determined time, Raspberry Pi will calculate that swimmer's position, path of movement and send an order to the linear stage.

The linear stage will uplifts the swimmer and Meanwhile, a warning message will signal the life guard of imminent danger. With such systems, the number of drownings would be reduced. For future development, the system is currently being improved by attaching an infrared LED to swimmers's vest.

## 13.Appendix

The protection of swimmers is ensured to all facilities by a vigilance provided by personnel assigned to control the activities carried out in the pools. These controls have several critical points. The biggest problem is the difficulty in seeing the bottom of the pool.

AngelEye LifeGuard is specifically designed to provide support to lifeguards in the supervision of swimmers. It offers an additional level of safety and integrates seamlessly into rescue operations.

**Demo link:- (Via youtube link) :**

<https://youtu.be/tuhgeChzAVI>

